TinyOS Network Protocol
Working Group (net2)
Progress Report

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ETH, IPP, UCB, USC, Arch Rock, MIT, Stanford,
Harvard, Moteiv, Crossbow
net2 Charter

• Define the interfaces to basic network protocols in t2, such as collection and dissemination
• Produce reference implementations of those protocols

http://tinyos.stanford.edu:8000/Net2WG
Output Over the Past Year

• Protocol Implementations
  – Dissemination
  – Collection
  – MultihopLQI

• Code Documentation
  – Collection (TEP 119) and Dissemination (TEP 118)

• Protocol Specifications
  – CTP (TEP 123) and LEEP (TEP 124)
Protocol Implementations

• Dissemination
  – Disseminate \(<key,\text{value}>\) throughout the network from a base station

• Collection
  – Collect data from all the nodes in the network

• Applications
  – TestNetwork
  – MultihopOscilloscope
CTP Collection is Reliable!

55 nodes, 5 hrs
@ 1 pkt/5s
Delivery ratio = 0.979

87 nodes, 18 hrs
@ 1 pkt/10s
Delivery ratio = 0.986
CTP and LEEP Specification

CTP Routing Frame

<table>
<thead>
<tr>
<th>P</th>
<th>C</th>
<th>Reserved</th>
<th>parent</th>
</tr>
</thead>
<tbody>
<tr>
<td>parent</td>
<td>ETX</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ETX

LEEP Frame

<table>
<thead>
<tr>
<th>NE</th>
<th>Reserved</th>
<th>Seq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload…</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Node id 1

Link Quality 1 | Node id 2 |

Node id 2 | Link Quality 2 |

Total NE entries …

CTP Data Frame

<table>
<thead>
<tr>
<th>P</th>
<th>C</th>
<th>Reserved</th>
<th>THL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route ETX</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Origin |

Seq | Collect ID |

Payload…
Call for Involvement

• Future Net2 projects
  – Zigbee
  – Deluge (with core)
  – Link layer specification (with core)
  – CTP interoperability: SunSpot, SOS…
  – And your protocols …

• Participation Requirements
  – Have experience with network protocols
  – Commit to supporting code for a year

• Contact Omprakash Gnawali (chair)
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